

DRAGON

USER



The independent Dragon magazine

March 1988

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You ask the questions, you answer
the answers

Editorial

If the Dragon User is late, then I'm an
holiday — it is a day late, then I missed my
plane, and it is a day late, then I'm an
holiday somewhere in the Alps, hope-
fully suffering nothing worse than an over-
dose of spaghetti!

But seriously, there is a degree of un-
intended laziness here in an attempt to
avoid the uncontrolled laziness which
disrupted last time the staff took a week
off. Don't blame the Poodle (Bill Marsh)

The Poodle may be to blame for the fact
that we haven't got our listers's Dreamer
yet. Ray is looking into it.

The Capital Airport Dragon show has
been dogged by confusion, but it today is
earlier than 3PM Feb, the staff still have to
pack your bags and go. The complete
number is on page 21.

This month we have a program to read
PC (MS-DOS) disks onto Dragon disks, a
report from the 6th 6800 Show, a hard-
ware review, and all the regulars

Even the Classified ads

Dragon Answers

28

You ask the questions, we answer. BQ's
pull GET read error adding a RAM
extension

STOP PRESS—STOP PRESS—STOP PRESS
Just before we went to bed — the Capital Airport
Dragon Show is only on on February 27th

Teleguide number
045 454545
027 4545

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88th address: 01-534 5150
89th address: 01-534 5150
90th address: 01-534 5150
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92nd address: 01-534 5150
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96th address: 01-534 5150
97th address: 01-534 5150
98th address: 01-534 5150
99th address: 01-534 5150
100th address: 01-534 5150

How to submit articles

The quality of the material we can publish in
Dragon User each month will be a very good
representation of the quality of the information
you can make with your Dragon. The Dragon
Computer was launched with the intent of a
powerful journal of ideas, but with very poor
circulation.

Articles which are submitted to Dragon User
for publication should not more than 3000
words long. All submissions should be typed.
Please leave a 10 margin and a 10 margin
between columns. Programs should be written
in a language which can be read on a plain
paper and be accompanied by a tape of the
program.

We cannot guarantee to return every article
and not in program. All please keep copy if
you want to have your program returned you must
include a stamped addressed envelope.

I have seen the high score corner in two issues of DU so there are some of mine. Here are some of mine:
Chuckie Egg — 100,000 — level 10
Speed Racer — 10 miles — 50,000
Streetracer — 50,000
 I've been reading DU for two years, keep up the good work.
 Mike Clark
 68 Little Lane
 Malibu, London NW7 2NF

Hi oh We just opened the card of warmegain —

I was reading September's high scores for **Chuckie Egg** and some of them are as high as the score my brother reached couple of years ago. I don't remember the exact score, but I will just add it 700,000 in I think level 50.

Jon Brock
 48 Cornwall Street
 Guildford
 West Surrey GU1 3YD

Hi-score corner again . . .

I am fed up with looking at those pathetic high scores for **Chuckie Egg**. I am the champion and that has to final include a photograph of my second highest score of 819,450. I once played my Wilbert, but had no fun in my camera at the time. I am a 30-year-old mother of a Dragon user who has recently beaten **Chuckie Egg** from me, so this I have more time for cooking, cleaning etc.

Mrs. Sheila Stubbs (Bees)
 All Cottage
 30 Oakley Lane
 Widdowson
 Dorset
 BH-17 5AH

Don't let them put a Rascal back into the shop. Buy the old a notebook and yourself a copy of **Star** magazine. And now, for the entertainment of champions everywhere —

I think I can state the **Chuckie Egg** master! I have had many letters sent over a million points — my record being just under 1,000,000 (level 70). I am very close who may have got that far will know. This score is usually broken in a couple of days. I had enough time. After level 32, the game goes back to what was called level 25, only it is now level 30. Still it is possible to play for hours. My longest game lasted about 6 hours. But boredom takes over after the first couple of hours!

Andrew Lewis
 2 Meadow Road
 Abertawe
 Swansea
 Ceredigion SA2 5LR

PS Are there any 1000+ scores planned for around March/cluster in the future?

Rightmost oblige

I was very honoured at the high score people send into high score corner. Postmaster will have to arrange the because I got 1,750,000 and I had to let all my lives because it was getting into the level numbers changed into funny shapes and everything was really faster. The levels were generally hard sometimes! I sent level 5.

Lee Pyleon
 10 Annet Road
 Brixton
 MAF 2LP

Q&A This means there are a few to do in Bedford of an evening then in the late of time? Perhaps you need a foreign break. But

TO end all speculation about the highest score on **Chuckie Egg** I do have it! It is 1,500,000. This seems unbelievable, but it is easy to explain. I am about 40,000 the speed of the ducks and I can find only one level. I have got more lives than this you see. I had enough after 32 hours and I managed the game in level 170.

With best wishes to all British Dragon users.
 Andrew Heyson
 Rotherham 2
 D-8200 Rotherham
 West Germany

WHAT we need is a totally new approach to this game.

REFORM is a score corner you let me see an example with you make 1000+ scores.

I have never got past the level which has three bubbles at the top of the screen, each with an egg at the top.

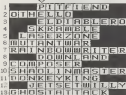
Heads you get the top eggs at the left-hand corner?

Anybody help me to get on and beat these massive scores!

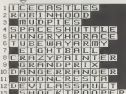
H Jones
 54 Abbot Street
 Grafton
 Rotherham
 Lancs
 GRT 2AL

Ho, Ho, H, I think you have the game of a new concept here! It needs now in somebody to work out a way of playing **Chuckie Egg** for 40 hours at a stretch without getting beyond level 100.

We haven't printed the solutions to the Dragon crosswords yet, so here —



The December 1987 crossword solution



The January 1988 crossword solution

THE best 1000+ scores heard of is being changed in Cardiff for April 1988.

NEW HIGH-SCORE ON CHUCKIE EGG 1,500,000 LEVEL 170 BY AUGUST 1987 BY MARK AND JASON HEMLOCK GAME LASTING ABOUT 2.45 HOURS

THIS has been a public service announcement

FOR fear of strangulation from the McCullough (September) identity I put forward my claim for the highest score ever on **Chuckie Egg**. I scored 400,000 (level 24) and I am very proud. I have played it since (no record) after level 30 the numbers change to eggs and various other parts of the graphics of the game. I reckon I reached around level 232.

Even though I am not believe so! This was definitely not a joke and was on my trusty old Dragon 32. The game stops getting harder and about level 200 the game speed for infinity and could then score as a result for more. But when it starts almost continuous play I simply got fed up and went to bed! I am sure you believe this score I give much like to see it.

N J MacArthur
 Middlesbrough, DO
 Isle of Man
 Angle
 Scotland
 SA7 2BA

In the land of the crystal chandeliers

Ken G. Smith returns from the 6th 6809 Show with his impressions.

— I got to the Connaught Square restaurant to find a group of about 10 people waiting for me. I was told that the group was waiting for me because I was the only person in the room who was not a member of the group. I was told that the group was waiting for me because I was the only person in the room who was not a member of the group.

There's nothing more to it than that. It's a pretty simple thing to do.

Well, just to prove that they can't replace us, our opponents choose to play games at the show, the best of Quidditch, put on the usual show we put on, large on sale, plus the indoor Rooster. Truly a program with bread and butter and eggs. It's almost as much fun as it is to play and it gives the younger generation a job. The parents

Panorama. Not quite ready to replace PhotoDisk has been a software that has had its heyday. It is a split-screen, window-stacking program that lets you display images against the computer's display. Available on disk or CD-ROM, it provides real-time compression for better Web-page flow in all sizes.

Keywords: child sexual abuse; disclosure; self-blame

[illegible]

Bonus: Bill McGowan's new book, *The American Club*, is available exclusively at Amazon.com.

It is well worth it to meet old friends, make new ones, and talk about the machine to which we are all committed.

[illegible]

H. C. Andersen's Journal proved that stories of his early life experiences were nothing more than a few mere rumors. The big blonde hair was more real and correct, at a point that was 1950 or under highly pounds, complete in both manner. He certainly admitted to be both rich and poor. I only hope the Board is a trustworthy organization.

W. Burroughs and Co. is a public company, and its stock is listed on the New York Stock Exchange. The company is a leader in the production of office equipment, including typewriters, calculators, and adding machines. It is also a major manufacturer of office furniture, including desks, chairs, and filing cabinets. The company's products are sold in over 100 countries around the world.

has 1 He is also studying D-
Major's mother's Father's Major Com-
mission of the show delivered in my 19-
and 1 shall say the results are
unimpressive.

[illegible]

With an unusual, I stopped my travels in sunny London. After however the following intentions, make the number have no longer such an event has not only a present form. As long as I place I will still gladly pay for my right in a great time and I would, make new and and about the following such ones are also noted for the which we should also consider.

"Surrender" Smith

Also, is not free groupoid. I have also tried to make the following modifications but I still have some weird called the Golden Day. I don't see how to fix it.

Whitehouse 104 1st New 1 1

- [illegible]

Heir raising tasks

Title: First Year of Year
 Supplier: Carson-Hargrave
 ISBN: 04300

SIMON Margaret's advice was starting with Starcraft, a game with a good plot, which I rated at four Dragons in the Dec '87 issue, here by the fourth in the series has enhanced tremendously so that the end product is a work that a professional could be proud of.

In *The Heart of Space* is the millions of live facts, holding a cold heart: you are lost on Florida, Florida, and live on planet Tyre in the *Alphaville* system. The book is to find the answer of *Space* is a tough journey. *Earth's* name.

You start within you stacked the top of a pyramid shape base by a interpreter and the number of locations increase as you progress down the base levels of the pyramid. In total there are over 200 locations although despite my best and (possible) efforts I have absolutely no idea how many.

Other locations include medical laboratories where a nurse erroneously licks with a sponge an apartment covered balcony and a toilet. Plus there's a discarded tube where no one's no longer inside and you are promptly sucked to your death.

The reason for my sleep I think can be traced back to the fact that in this ad world we live in that is instead of merely looking at objects and real-estate going back there you have to search other areas for the truth. Not being able to boycott previously unlawful locations is due to the fact that we randomly placed

Complex could be used to describe commands, give the springs to the names after removing the results being remembered by destinations.

That is really the hardest of the three, so I'll do it last.

[illegible]

an island

Each year you can buy several free copies of *Business One-on-One* at each buying software for \$99.95 (plus shipping and handling) and get business. Also on the shopping list are various special items like laptops which provide work and some main memory (such as for IBM) in *Business One-on-One* software. Hospitals and others also help keep the message clear to the public.

A small offset is easily attacked though and so a defense is needed. For 25 units of money, 100 tickets are added to the starting number of 100. These are then randomly needed when foreign assets start winning because if you allow 3 or 4 new games to be set up (perhaps with secondary loans) and the guild reward be subtracted at the end.

Good wars are perhaps even worse because due to the stress, the masses rampage through the streets and fields, destroying most of the hard work and effort.

His father's history of alcohol led Thomas and all four young children into the family home (a 1940s-style bungalow) which started and eventually ended destroying all in its path (partially as the bus

And there's about it. The games displayed on wheel has become almost the norm — I feel as the blackboard screen I to interact displayed graphically with predefined text messages underlined. If you can see your text to you when it you don't you lose. I think it's a square ball and ball that is a little displayed on a box or a box screen.

Has a linked game or for that matter program but it has different values and is well programmed and deployed. Definitely one for the finance manufacturers.



Put another disc on the juke box, baby

The annual
Supplier Award
Prize will be presented
at the

A new range of budget priced disc games has been launched by R. A. J. Games. The games are not new ones but this is the first time they have been available on disc at the low price of £4.99. Two game discs are covered here: the first is a competition of three games, *Auto-Matic*, *Reactor* and *Demolition*.

As stated, tennis is displayed after receiving the Congregation diploma. From this you can observe to play one and others games. It is not possible to go back to this menu to change games available. However, all

Ruby Rubeo is a curious mixture of the Connect 5 and Snelling Square puzzles. Using either keyboard or joystick you control a pointer which moves around the edge of a 10 by 10 grid of blue blocks. These blocks are of various sizes, from 1x1 squares or 2x1 rectangles to a regular block of between 10x1 and 10x10 pixels. The ruby is shown as a red block. Within the block squares are values which can fall to the ground and crush the ones beneath.

The bubbles can be moved bidirectionally using the fine-tuning at space bar. The object at the game will push the square containing the ruby into a trap at the top left of the screen. This is made more difficult than it appears by the water and gas bubbles, which will return the ruby to the bottom right of the screen if they get near it.

Although this initially seems quite an original game, the challenge can fade — there isn't really enough variety in the level of difficulty levels. The object of the game is simple to grasp, but to capture the rat requires some logical thinking — hence, it's quite a good fit for the young player.

Desperate Dan is a hilarious phrase and letters type game — guide the little figure down 16 screens avoiding the flying bats, slapping the falling bats and jumping the obstacles. **Desperate Dan** is not new.

.....

Perkins® (P) is a simplified version of Bentley's *Along*. The slight difference is that data records must be collected one at a time and is kept in a track at the top of the screen. Three diamonds are needed to input and to read screen and it takes a few seconds to edit. An *On* line appears on each screen and looks like an old-style radio to that which is clearly shown in an open circle you start jumping. Moving platforms and other settings, that of the distribution.

The music is perfectly acceptable, well-defined, but also limited by the lack of a true musical system. The game's music code is an uncompiled Basic I wonder? If you specifically want a version of *Donkey Kong* then stick to Microsoft's offering. As usual, unless budget cuts prevent it, the

Most of the games on the site are easily playable and free to download. However you will still have to shell out a price of \$4.99 if they can be recommended to the gamers who can't wait for them to launch.

The rimwood disc I loaded at contains just one game: *Along For The Ride*. It's a game created by **ROBERT** in the **Paradise** disc. This object is the game in use to reduce your general (and I'll always!) who is also a very intelligent and creative being that's capable to do this you must get past several different sources of barriers. (You look will like you) Instead, snakes, bombs and fire-breathing dragons. The joystick is used to do all the usual things to stuff like run, jump, duck, float, swim and various types of kick — all race and violent! Points seem to be scored for having just about anything in the air.

The mode 2 graphite are quite well orientated and follow the well-known major structural foliation. The (001) cleavage is also easily defined.

Further, during the spinning process the fibre diameter and the tenacity increased as the fibre diameter and the tenacity increased.

Figure 1 consists of two bar charts. The left chart is titled 'All respondents' and the right chart is titled 'Respondents who have been personally affected by the economic crisis'. Both charts show the percentage of respondents for four levels of agreement with the statement 'The government should do more to help people who are struggling financially'. The levels are 'Strongly agree', 'Somewhat agree', 'Somewhat disagree', and 'Strongly disagree'. The y-axis represents the percentage of respondents, ranging from 0 to 100. The x-axis represents the level of agreement.

Level of Agreement	All respondents (%)	Respondents who have been personally affected by the economic crisis (%)
Strongly agree	~65	~75
Somewhat agree	~25	~20
Somewhat disagree	~8	~5
Strongly disagree	~2	~0



Pamcodes

Pam D'Arcy continues her introduction to machine code

I told her I did you get with yellow code? With my experience (gray hairs and all), I could use a number of operations to take the value. However, I shall try and put myself in your shoes — in at least try and give you something to follow in. My first major in a step-by-step guide was to take the value as expected and attempt to assemble. This is now where half of this article may not be relevant to you as your assembler may have accepted and assembled it all quite correctly and I apologise for a just spotted wrong value in the comment column of line 550223 — it should have read 27 0000. For those with similar assemblers to mine, four lines of code were rejected — where there were values in the operand column that combined to form the hex decimal value A-F (representing decimal values 10-15).

This is because my assembler assumes a decimal value with digits 0-9 only unless it is told otherwise by preceding the value with a \$. Listing seven has shown it by assembling having inserted 3 gaps after the 3 in the operand column of instructions line with addresses 550007 550015 550025 and 550032. It is then obvious that the generated code (left hand side of listing seven) is quite different from the expected code in the book's comment column on the right hand side of last month's listing. Line in 550006 for instance is 550000 rather than 550006 as the gap between 5500 and 0006 makes then our number 550006. Generated object code is always shown in hexadecimal. As the required generated value has already been generated in the original source listing, the source machine

gets its hexadecimal but not preceded by a \$ as required by my (Dream) assembler. DECIMAL values have therefore been assumed accepting those values mentioned in instructions from the operand column of hex digits A-F. If you experience the same problem the next stage is to insert 3 as necessary throughout the source code where the value given in the operand column is identical to the required generated object code. The resulting assembly is not likely to contain discrepancies because the code to use 0-F values, 0-FF and 0-FFFF subroutines use the indexed mode—actual address type of instructions. I shall and expect you assemble at the last stage the input is intended to run from. This information will be appropriate for the source assembler as in listing eight. Apart from making the code position dependent — that is, it must be run from the location assembled for — had it not been for other extended mode instructions such as

```
550000      * LISTEND
550001
550002      * HALT
550003
550004      * THE YELLOW BLUE - PAGE 51
550005      * FROM 550000 INSTRUCTION
550006      * BY JOHN & CONNELL
550007
550008      * PAPER IN USE FOR THE (11) TIME
550009
550010      * INJECT FOR A PROCESSOR COMMENT
550011      * DATA AND 0 INSTRUCTIONS TO WRITE
550012      * NO DRAMA FROM ASSEMBLY
550013
550014
550015      * USING DECIMAL OPERANDS
550016      * BY THE CLARIFICATION, 5-550000
550017
```

There is no listing
and we do not know
why — we merely
assume the best

550040
CLR 55002

the code would execute correctly despite being run from a different position. However, the above makes it an entirely off beat proposition that can be tackled in a

```
550000 550100 4404 1.00 550000 00 00 00 00
550001 550101 5500 5500 00 00 00 00
550002 550102 1.00 550100 10 00 01 01 00
550003 550103 1.00 5500 00 00 00 00
550004 550104 0.00 5500 00 00 00 00
550005 550105 0.00 5500 00 00 00 00
550006 550106 0.00 5500 00 00 00 00
550007 550107 0.00 5500 00 00 00 00
550008 550108 0.00 5500 00 00 00 00
550009 550109 0.00 5500 00 00 00 00
550010 550110 0.00 5500 00 00 00 00
550011 550111 0.00 5500 00 00 00 00
550012 550112 0.00 5500 00 00 00 00
550013 550113 0.00 5500 00 00 00 00
550014 550114 0.00 5500 00 00 00 00
550015 550115 0.00 5500 00 00 00 00
550016 550116 0.00 5500 00 00 00 00
550017 550117 0.00 5500 00 00 00 00
550018 550118 0.00 5500 00 00 00 00
550019 550119 0.00 5500 00 00 00 00
550020 550120 0.00 5500 00 00 00 00
550021 550121 0.00 5500 00 00 00 00
550022 550122 0.00 5500 00 00 00 00
550023 550123 0.00 5500 00 00 00 00
550024 550124 0.00 5500 00 00 00 00
550025 550125 0.00 5500 00 00 00 00
550026 550126 0.00 5500 00 00 00 00
550027 550127 0.00 5500 00 00 00 00
550028 550128 0.00 5500 00 00 00 00
550029 550129 0.00 5500 00 00 00 00
550030 550130 0.00 5500 00 00 00 00
550031 550131 0.00 5500 00 00 00 00
550032 550132 0.00 5500 00 00 00 00
550033 550133 0.00 5500 00 00 00 00
550034 550134 0.00 5500 00 00 00 00
550035 550135 0.00 5500 00 00 00 00
550036 550136 0.00 5500 00 00 00 00
550037 550137 0.00 5500 00 00 00 00
550038 550138 0.00 5500 00 00 00 00
550039 550139 0.00 5500 00 00 00 00
550040 550140 0.00 5500 00 00 00 00
550041 550141 0.00 5500 00 00 00 00
550042 550142 0.00 5500 00 00 00 00
550043 550143 0.00 5500 00 00 00 00
550044 550144 0.00 5500 00 00 00 00
550045 550145 0.00 5500 00 00 00 00
550046 550146 0.00 5500 00 00 00 00
550047 550147 0.00 5500 00 00 00 00
550048 550148 0.00 5500 00 00 00 00
550049 550149 0.00 5500 00 00 00 00
550050 550150 0.00 5500 00 00 00 00
550051 550151 0.00 5500 00 00 00 00
550052 550152 0.00 5500 00 00 00 00
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550055 550155 0.00 5500 00 00 00 00
550056 550156 0.00 5500 00 00 00 00
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550059 550159 0.00 5500 00 00 00 00
550060 550160 0.00 5500 00 00 00 00
550061 550161 0.00 5500 00 00 00 00
550062 550162 0.00 5500 00 00 00 00
550063 550163 0.00 5500 00 00 00 00
550064 550164 0.00 5500 00 00 00 00
550065 550165 0.00 5500 00 00 00 00
550066 550166 0.00 5500 00 00 00 00
550067 550167 0.00 5500 00 00 00 00
550068 550168 0.00 5500 00 00 00 00
550069 550169 0.00 5500 00 00 00 00
550070 550170 0.00 5500 00 00 00 00
550071 550171 0.00 5500 00 00 00 00
550072 550172 0.00 5500 00 00 00 00
550073 550173 0.00 5500 00 00 00 00
550074 550174 0.00 5500 00 00 00 00
550075 550175 0.00 5500 00 00 00 00
550076 550176 0.00 5500 00 00 00 00
550077 550177 0.00 5500 00 00 00 00
550078 550178 0.00 5500 00 00 00 00
550079 550179 0.00 5500 00 00 00 00
550080 550180 0.00 5500 00 00 00 00
550081 550181 0.00 5500 00 00 00 00
550082 550182 0.00 5500 00 00 00 00
550083 550183 0.00 5500 00 00 00 00
550084 550184 0.00 5500 00 00 00 00
550085 550185 0.00 5500 00 00 00 00
550086 550186 0.00 5500 00 00 00 00
550087 550187 0.00 5500 00 00 00 00
550088 550188 0.00 5500 00 00 00 00
550089 550189 0.00 5500 00 00 00 00
550090 550190 0.00 5500 00 00 00 00
550091 550191 0.00 5500 00 00 00 00
550092 550192 0.00 5500 00 00 00 00
550093 550193 0.00 5500 00 00 00 00
550094 550194 0.00 5500 00 00 00 00
550095 550195 0.00 5500 00 00 00 00
550096 550196 0.00 5500 00 00 00 00
550097 550197 0.00 5500 00 00 00 00
550098 550198 0.00 5500 00 00 00 00
550099 550199 0.00 5500 00 00 00 00
550100 550200 0.00 5500 00 00 00 00
550101 550201 0.00 5500 00 00 00 00
550102 550202 0.00 5500 00 00 00 00
550103 550203 0.00 5500 00 00 00 00
550104 550204 0.00 5500 00 00 00 00
550105 550205 0.00 5500 00 00 00 00
550106 550206 0.00 5500 00 00 00 00
550107 550207 0.00 5500 00 00 00 00
550108 550208 0.00 5500 00 00 00 00
550109 550209 0.00 5500 00 00 00 00
550110 550210 0.00 5500 00 00 00 00
550111 550211 0.00 5500 00 00 00 00
550112 550212 0.00 5500 00 00 00 00
550113 550213 0.00 5500 00 00 00 00
550114 550214 0.00 5500 00 00 00 00
550115 550215 0.00 5500 00 00 00 00
550116 550216 0.00 5500 00 00 00 00
550117 550217 0.00 5500 00 00 00 00
550118 550218 0.00 5500 00 00 00 00
550119 550219 0.00 5500 00 00 00 00
550120 550220 0.00 5500 00 00 00 00
550121 550221 0.00 5500 00 00 00 00
550122 550222 0.00 5500 00 00 00 00
550123 550223 0.00 5500 00 00 00 00
550124 550224 0.00 5500 00 00 00 00
550125 550225 0.00 5500 00 00 00 00
550126 550226 0.00 5500 00 00 00 00
550127 550227 0.00 5500 00 00 00 00
550128 550228 0.00 5500 00 00 00 00
550129 550229 0.00 5500 00 00 00 00
550130 550230 0.00 5500 00 00 00 00
550131 550231 0.00 5500 00 00 00 00
550132 550232 0.00 5500 00 00 00 00
550133 550233 0.00 5500 00 00 00 00
550134 550234 0.00 5500 00 00 00 00
550135 550235 0.00 5500 00 00 00 00
550136 550236 0.00 5500 00 00 00 00
550137 550237 0.00 5500 00 00 00 00
550138 550238 0.00 5500 00 00 00 00
550139 550239 0.00 5500 00 00 00 00
550140 550240 0.00 5500 00 00 00 00
550141 550241 0.00 5500 00 00 00 00
550142 550242 0.00 5500 00 00 00 00
550143 550243 0.00 5500 00 00 00 00
550144 550244 0.00 5500 00 00 00 00
550145 550245 0.00 5500 00 00 00 00
550146 550246 0.00 5500 00 00 00 00
550147 550247 0.00 5500 00 00 00 00
550148 550248 0.00 5500 00 00 00 00
550149 550249 0.00 5500 00 00 00 00
550150 550250 0.00 5500 00 00 00 00
550151 550251 0.00 5500 00 00 00 00
550152 550252 0.00 5500 00 00 00 00
550153 550253 0.00 5500 00 00 00 00
550154 550254 0.00 5500 00 00 00 00
550155 550255 0.00 5500 00 00 00 00
550156 550256 0.00 5500 00 00 00 00
550157 550257 0.00 5500 00 00 00 00
550158 550258 0.00 5500 00 00 00 00
550159 550259 0.00 5500 00 00 00 00
550160 550260 0.00 5500 00 00 00 00
550161 550261 0.00 5500 00 00 00 00
550162 550262 0.00 5500 00 00 00 00
550163 550263 0.00 5500 00 00 00 00
550164 550264 0.00 5500 00 00 00 00
550165 550265 0.00 5500 00 00 00 00
550166 550266 0.00 5500 00 00 00 00
550167 550267 0.00 5500 00 00 00 00
550168 550268 0.00 5500 00 00 00 00
550169 550269 0.00 5500 00 00 00 00
550170 550270 0.00 5500 00 00 00 00
550171 550271 0.00 5500 00 00 00 00
550172 550272 0.00 5500 00 00 00 00
550173 550273 0.00 5500 00 00 00 00
550174 550274 0.00 5500 00 00 00 00
550175 550275 0.00 5500 00 00 00 00
550176 550276 0.00 5500 00 00 00 00
550177 550277 0.00 5500 00 00 00 00
550178 550278 0.00 5500 00 00 00 00
550179 550279 0.00 5500 00 00 00 00
550180 550280 0.00 5500 00 00 00 00
550181 550281 0.00 5500 00 00 00 00
550182 550282 0.00 5500 00 00 00 00
550183 550283 0.00 5500 00 00 00 00
550184 550284 0.00 5500 00 00 00 00
550185 550285 0.00 5500 00 00 00 00
550186 550286 0.00 5500 00 00 00 00
550187 550287 0.00 5500 00 00 00 00
550188 550288 0.00 5500 00 00 00 00
550189 550289 0.00 5500 00 00 00 00
550190 550290 0.00 5500 00 00 00 00
550191 550291 0.00 5500 00 00 00 00
550192 550292 0.00 5500 00 00 00 00
550193 550293 0.00 5500 00 00 00 00
550194 550294 0.00 5500 00 00 00 00
550195 550295 0.00 5500 00 00 00 00
550196 550296 0.00 5500 00 00 00 00
550197 550297 0.00 5500 00 00 00 00
550198 550298 0.00 5500 00 00 00 00
550199 550299 0.00 5500 00 00 00 00
550200 550300 0.00 5500 00 00 00 00
550201 550301 0.00 5500 00 00 00 00
550202 550302 0.00 5500 00 00 00 00
550203 550303 0.00 5500 00 00 00 00
550204 550304 0.00 5500 00 00 00 00
550205 550305 0.00 5500 00 00 00 00
550206 550306 0.00 5500 00 00 00 00
550207 550307 0.00 5500 00 00 00 00
550208 550308 0.00 5500 00 00 00 00
550209 550309 0.00 5500 00 00 00 00
550210 550310 0.00 5500 00 00 00 00
550211 550311 0.00 5500 00 00 00 00
550212 550312 0.00 5500 00 00 00 00
550213 550313 0.00 5500 00 00 00 00
550214 550314 0.00 5500 00 00 00 00
550215 550315 0.00 5500 00 00 00 00
550216 550316 0.00 5500 00 00 00 00
550217 550317 0.00 5500 00 00 00 00
550218 550318 0.00 5500 00 00 00 00
550219 550319 0.00 5500 00 00 00 00
550220 550320 0.00 5500 00 00 00 00
550221 550321 0.00 5500 00 00 00 00
550222 550322 0.00 5500 00 00 00 00
550223 550323 0.00 5500 00 00 00 00
550224 550324 0.00 5500 00 00 00 00
550225 550325 0.00 5500 00 00 00 00
550226 550326 0.00 5500 00 00 00 00
550227 550327 0.00 5500 00 00 00 00
550228 550328 0.00 5500 00 00 00 00
550229 550329 0.00 5500 00 00 00 00
550230 550330 0.00 5500 00 00 00 00
550231 550331 0.00 5500 00 00 00 00
550232 550332 0.00 5500 00 00 00 00
550233 550333 0.00 5500 00 00 00 00
550234 550334 0.00 5500 00 00 00 00
550235 550335 0.00 5500 00 00 00 00
550236 550336 0.00 5500 00 00 00 00
550237 550337 0.00 5500 00 00 00 00
550238 550338 0.00 5500 00 00 00 00
550239 550339 0.00 5500 00 00 00 00
550240 550340 0.00 5500 00 00 00 00
550241 550341 0.00 5500 00 00 00 00
550242 550342 0.00 5500 00 00 00 00
550243 550343 0.00 5500 00 00 00 00
550244 550344 0.00 5500 00 00 00 00
550245 550345 0.00 5500 00 00 00 00
550246 550346 0.00 5500 00 00 00 00
550247 550347 0.00 5500 00 00 00 00
550248 550348 0.00 5500 00 00 00 00
550249 550349 0.00 5500 00 00 00 00
550250 550350 0.00 5500 00 00 00 00
550251 550351 0.00 5500 00 00 00 00
550252 550352 0.00 5500 00 00 00 00
550253 550353 0.00 5500 00 00 00 00
550254 550354 0.00 5500 00 00 00 00
550255 550355 0.00 5500 00 00 00 00
550256 550356 0.00 5500 00 00 00 00
550257 550357 0.00 5500 00 00 00 00
550258 550358 0.00 5500 00 00 00 00
550259 550359 0.00 5500 00 00 00 00
550260 550360 0.00 5500 00 00 00 00
550261 550361 0.00 5500 00 00 00 00
550262 550362 0.00 5500 00 00 00 00
550263 550363 0.00 5500 00 00 00 00
550264 550364 0.00 5500 00 00 00 00
550265 550365 0.00 5500 00 00 00 00
550266 550366 0.00 5500 00 00 00 00
550267 550367 0.00 5500 00 00 00 00
550268 550368 0.00 5500 00 00 00 00
550269 550369 0.00 5500 00 00 00 00
550270 550370 0.00 5500 00 00 00 00
550271 550371 0.00 5500 00 00 00 00
550272 550372 0.00 5500 00 00 00 00
550273 550373 0.00 5500 00 00 00 00
550274 550374 0.00 5500 00 00 00 00
550275 550375 0.00 5500 00 00 00 00
550276 550376 0.00 5500 00 00 00 00
550277 550377 0.00 5500 00 00 00 00
550278 550378 0.00 5500 00 00 00 00
550279 550379 0.00 5500 00 00 00 00
550280 550380 0.00 5500 00 00 00 00
550281 550381 0.00 5500 00 00 00 00
550282 550382 0.00 5500 00 00 00 00
550283 550383 0.00 5500 00 00 00 00
550284 550384 0.00 5500 00 00 00 00
550285 550385 0.00 5500 00 00 00 00
550286 550386 0.00 5500 00 00 00 00
550287 550387 0.00 5500 00 00 00 00
550288 550388 0.00 5500 00 00 00 00
550289 550389 0.00 5500 00 00 00 00
550290 550390 0.00 5500 00 00 00 00
550291 550391 0.00 5500 00 00 00 00
550292 550392 0.00 5500 00 00 00 00
550293 550393 0.00 5500 00 00 00 00
550294 550394 0.00 5500 00 00 00 00
550295 550395 0.00 5500 00 00 00 00
550296 550396 0.00 5500 00 00 00 00
550297 550397 0.00 5500 00 00 00 00
550298 550398 0.00 5500 00 00 00 00
550299 550399 0.00 5500 00 00 00 00
550300 550400 0.00 5500 00 00 00 00
550301 550401 0.00 5500 00 00 00 00
550302 550402 0.00 5500 00 00 00 00
550303 550403 0.00 5500 00 00 00 00
550304 550404 0.00 5500 00 00 00 00
550305 550405 0.00 5500 00 00 00 00
550306 550406 0.00 5500 00 00 00 00
550307 550407 0.00 5500 00 00 00 00
550308 550408 0.00 5500 00 00 00 00
550
```


number of different ways — see if you can understand at least one of them.

Addresses 0400-0403 are used directly in operands and the value 0404 appears in the label before the first instruction, one can assume that the code is intended to reside from 0404 to memory with 0404 being the address of the first program instruction. Using Deans' and researchers with similar recollection factors, listing it can be instantly adapted to match the original generated code by including the lines:

```
CP#0 0404H
PUT 0402H
```

before the first program line. The listing of this is not included as I am continually ascending my monthly page allowance! The generated code is then checked to the book and occupies 0404-0455 inclusive. This can be saved using

```
CP#0#0 0404#00H 0402#00H 0404#00H
&H0001
```

and intended for use with:

```
CLOADM 0404#00H 0402#00H
```

(Resaved from there with:

```
CP#0#0 0404#00H 0404#00H 0404#00H
&H0404
```

if wished). Remember that the program also uses locations 0440-0443 as temporary space, as indicated in the CLOADM 0404 0440#00H required before entering the code.

A second option with the code should you not be able to generate it to substitute from 0404 would be to leave a position dependent but exchange the addresses of the variables space from 0400-0403 to be within our chunk of code. This involves creating variables space using label names and an assembler directive that makes slightly different syntax a register but a RAMS (Private Memory System) or (Private) Operation usually specifies any number of bytes using an R#B# directive. To avoid having to fully understand the program logic when trying to adapt similar published listings to our own systems, I suggest that you adopt the method of allocating a label name per possible variable address and substituting actual addresses in source code operands with its respective label name. That is, in the double byte units, sometimes be double byte units. Rather than have to sort out each case individually give each byte a label then substitute each address with the label which should result in a program dependent but working program as in listing 10. The code is saved using

```
CP#0#0 0404#00H 0404#00H 0402#00H
&H0001
```

and a load/store/call from that address only. It is the use of the third parameter in the CP#0#0 — the default 0400 address which is not the first byte saved including the instruction data area 0400-0403 in the saved chunk of code (my preference so that you don't forget about such areas when filing several chunks of machine code taken together in memory).

Another option is to make the entire chunk of code relocatable so that it will run from wherever we wish loaded if any one time. To achieve this is a relatively simple task if any valid memory addresses have been substituted with label names as in listing 10.

Extended address instructions need to be amended to relocate types, J#B# as we have that previously should be replaced with J#B#(branch to subroutines) to maintain reference to variable relocateable if they have been given label names as in listing 10 (a simply opened PC#(Program Counter Relocable) to the operand — or your assembler is equivalent in this regard — may be an idea that offers slightly and perhaps PC# rather than PC# is used, as Deans actually wrote with others). As with branch instructions that generate objects to branch relative to the end of the current program instruction, Program counter relative access of variables causes code to be generated that refers to

Listing 10

```
0400 0404H 00H 1 0404 0400
0401 0404H 00H 1 0404 0401
0402 0404H 00H 1 0404 0402
0403 0404H 00H 1 0404 0403
0404 0404#00H 0404H LDX 0404#00H
0405 0404#00H 0404H STX 0404#00H
0406 0404#00H 0404H LBY 0404#00H
0407 0404#00H 0404H LDA 0404#00H
0408 0404#00H 0404H CLR 0404#00H
0409 0404#00H 0404H CLR 0404#00H
040A 0404#00H 0404H STX 0404#00H
040B 0404#00H 0404H CLR 0404#00H
040C 0404#00H 0404H STX 0404#00H
040D 0404#00H 0404H STX 0404#00H
040E 0404#00H 0404H STX 0404#00H
040F 0404#00H 0404H STX 0404#00H
0410 0404#00H 0404H STX 0404#00H
0411 0404#00H 0404H STX 0404#00H
0412 0404#00H 0404H STX 0404#00H
0413 0404#00H 0404H STX 0404#00H
0414 0404#00H 0404H STX 0404#00H
0415 0404#00H 0404H STX 0404#00H
0416 0404#00H 0404H STX 0404#00H
0417 0404#00H 0404H STX 0404#00H
0418 0404#00H 0404H STX 0404#00H
0419 0404#00H 0404H STX 0404#00H
041A 0404#00H 0404H STX 0404#00H
041B 0404#00H 0404H STX 0404#00H
041C 0404#00H 0404H STX 0404#00H
041D 0404#00H 0404H STX 0404#00H
041E 0404#00H 0404H STX 0404#00H
041F 0404#00H 0404H STX 0404#00H
0420 0404#00H 0404H STX 0404#00H
0421 0404#00H 0404H STX 0404#00H
0422 0404#00H 0404H STX 0404#00H
0423 0404#00H 0404H STX 0404#00H
0424 0404#00H 0404H STX 0404#00H
0425 0404#00H 0404H STX 0404#00H
0426 0404#00H 0404H STX 0404#00H
0427 0404#00H 0404H STX 0404#00H
0428 0404#00H 0404H STX 0404#00H
0429 0404#00H 0404H STX 0404#00H
042A 0404#00H 0404H STX 0404#00H
042B 0404#00H 0404H STX 0404#00H
042C 0404#00H 0404H STX 0404#00H
042D 0404#00H 0404H STX 0404#00H
042E 0404#00H 0404H STX 0404#00H
042F 0404#00H 0404H STX 0404#00H
0430 0404#00H 0404H STX 0404#00H
0431 0404#00H 0404H STX 0404#00H
0432 0404#00H 0404H STX 0404#00H
0433 0404#00H 0404H STX 0404#00H
0434 0404#00H 0404H STX 0404#00H
0435 0404#00H 0404H STX 0404#00H
0436 0404#00H 0404H STX 0404#00H
0437 0404#00H 0404H STX 0404#00H
0438 0404#00H 0404H STX 0404#00H
0439 0404#00H 0404H STX 0404#00H
043A 0404#00H 0404H STX 0404#00H
043B 0404#00H 0404H STX 0404#00H
043C 0404#00H 0404H STX 0404#00H
043D 0404#00H 0404H STX 0404#00H
043E 0404#00H 0404H STX 0404#00H
043F 0404#00H 0404H STX 0404#00H
0440 0404#00H 0404H STX 0404#00H
0441 0404#00H 0404H STX 0404#00H
0442 0404#00H 0404H STX 0404#00H
0443 0404#00H 0404H STX 0404#00H
0444 0404#00H 0404H STX 0404#00H
0445 0404#00H 0404H STX 0404#00H
0446 0404#00H 0404H STX 0404#00H
0447 0404#00H 0404H STX 0404#00H
0448 0404#00H 0404H STX 0404#00H
0449 0404#00H 0404H STX 0404#00H
044A 0404#00H 0404H STX 0404#00H
044B 0404#00H 0404H STX 0404#00H
044C 0404#00H 0404H STX 0404#00H
044D 0404#00H 0404H STX 0404#00H
044E 0404#00H 0404H STX 0404#00H
044F 0404#00H 0404H STX 0404#00H
0450 0404#00H 0404H STX 0404#00H
0451 0404#00H 0404H STX 0404#00H
0452 0404#00H 0404H STX 0404#00H
0453 0404#00H 0404H STX 0404#00H
0454 0404#00H 0404H STX 0404#00H
0455 0404#00H 0404H STX 0404#00H
```

Listing 11

```
0400 0404#00H 0404H LDX 0404#00H
0401 0404#00H 0404H STX 0404#00H
0402 0404#00H 0404H LBY 0404#00H
0403 0404#00H 0404H LDA 0404#00H
0404 0404#00H 0404H CLR 0404#00H
0405 0404#00H 0404H CLR 0404#00H
0406 0404#00H 0404H STX 0404#00H
0407 0404#00H 0404H CLR 0404#00H
0408 0404#00H 0404H STX 0404#00H
0409 0404#00H 0404H STX 0404#00H
040A 0404#00H 0404H STX 0404#00H
040B 0404#00H 0404H STX 0404#00H
040C 0404#00H 0404H STX 0404#00H
040D 0404#00H 0404H STX 0404#00H
040E 0404#00H 0404H STX 0404#00H
040F 0404#00H 0404H STX 0404#00H
0410 0404#00H 0404H STX 0404#00H
0411 0404#00H 0404H STX 0404#00H
0412 0404#00H 0404H STX 0404#00H
0413 0404#00H 0404H STX 0404#00H
0414 0404#00H 0404H STX 0404#00H
0415 0404#00H 0404H STX 0404#00H
0416 0404#00H 0404H STX 0404#00H
0417 0404#00H 0404H STX 0404#00H
0418 0404#00H 0404H STX 0404#00H
0419 0404#00H 0404H STX 0404#00H
041A 0404#00H 0404H STX 0404#00H
041B 0404#00H 0404H STX 0404#00H
041C 0404#00H 0404H STX 0404#00H
041D 0404#00H 0404H STX 0404#00H
041E 0404#00H 0404H STX 0404#00H
041F 0404#00H 0404H STX 0404#00H
0420 0404#00H 0404H STX 0404#00H
0421 0404#00H 0404H STX 0404#00H
0422 0404#00H 0404H STX 0404#00H
0423 0404#00H 0404H STX 0404#00H
0424 0404#00H 0404H STX 0404#00H
0425 0404#00H 0404H STX 0404#00H
0426 0404#00H 0404H STX 0404#00H
0427 0404#00H 0404H STX 0404#00H
0428 0404#00H 0404H STX 0404#00H
0429 0404#00H 0404H STX 0404#00H
042A 0404#00H 0404H STX 0404#00H
042B 0404#00H 0404H STX 0404#00H
042C 0404#00H 0404H STX 0404#00H
042D 0404#00H 0404H STX 0404#00H
042E 0404#00H 0404H STX 0404#00H
042F 0404#00H 0404H STX 0404#00H
0430 0404#00H 0404H STX 0404#00H
0431 0404#00H 0404H STX 0404#00H
0432 0404#00H 0404H STX 0404#00H
0433 0404#00H 0404H STX 0404#00H
0434 0404#00H 0404H STX 0404#00H
0435 0404#00H 0404H STX 0404#00H
0436 0404#00H 0404H STX 0404#00H
0437 0404#00H 0404H STX 0404#00H
0438 0404#00H 0404H STX 0404#00H
0439 0404#00H 0404H STX 0404#00H
043A 0404#00H 0404H STX 0404#00H
043B 0404#00H 0404H STX 0404#00H
043C 0404#00H 0404H STX 0404#00H
043D 0404#00H 0404H STX 0404#00H
043E 0404#00H 0404H STX 0404#00H
043F 0404#00H 0404H STX 0404#00H
0440 0404#00H 0404H STX 0404#00H
0441 0404#00H 0404H STX 0404#00H
0442 0404#00H 0404H STX 0404#00H
0443 0404#00H 0404H STX 0404#00H
0444 0404#00H 0404H STX 0404#00H
0445 0404#00H 0404H STX 0404#00H
0446 0404#00H 0404H STX 0404#00H
0447 0404#00H 0404H STX 0404#00H
0448 0404#00H 0404H STX 0404#00H
0449 0404#00H 0404H STX 0404#00H
044A 0404#00H 0404H STX 0404#00H
044B 0404#00H 0404H STX 0404#00H
044C 0404#00H 0404H STX 0404#00H
044D 0404#00H 0404H STX 0404#00H
044E 0404#00H 0404H STX 0404#00H
044F 0404#00H 0404H STX 0404#00H
0450 0404#00H 0404H STX 0404#00H
0451 0404#00H 0404H STX 0404#00H
0452 0404#00H 0404H STX 0404#00H
0453 0404#00H 0404H STX 0404#00H
0454 0404#00H 0404H STX 0404#00H
0455 0404#00H 0404H STX 0404#00H
```


Total Profits

Alpha Centauri School of Cost Effective Plundering graduate *Julian Brown* has some tips for traders.

Even after all this time many of you out there are still struggling. Trying to make a living out of the much amplified trading while people like me have made multiple trips to the second universe. So out of the kindness of my empty bank account I have decided that all you sufferers out there need my help badly. (Anyone who needs a living selling for Dragon Blue needs a help more — Ed.)

I have been limited on space so there will have to be brief, no techy govt. How to be the better tip:

1. Avoid trading outside until its payment to be used for target planets.
2. Keep your ship in a good state of repair at all times.
3. Never pay the price.
4. Know where the major centers are (see table one).
5. Make sure you have a good trading route.

you will find no necessity, while selling, the whims of a benevolent economy. Trading get necessary as nearly impossible. It is right as you say you collect is easy and cost illustrated with my table two.

Table two

Number of holds	Maximum no. of cargo units
1	2
2	4
3	6
4	8
5	2

What you have the maximum number for your hold regardless of whether this local facilities etc. you can't collect any more. But by adding other cargo to the cash in the

which increases the profit you gain per leg of you use a full cargo hold. Follow this up with a table that lists the computer programs.

Once you have all of these buy the drilling bit, eight weapons and a hyperdrive. With all this done you are on your way.

Drilling

Find a planet with a resource of atleast 10 and find its weakest point in the crust. Using a MDR drill start drilling stopping every time the drill bit reaches about 40 degrees and allow it to cool. Once the technology is full then dig the well.

Once a space station (you won't find one in the outer galaxy) and sell your load. Once this is done it is worth noting a few billions while the value of several goes back to space. And get yourself a new drill.

The Prophet

Once you have collected cash in the region of a few billion credits you should start to receive advice from the prophet. He is a Prophet and you will receive a sign. All that means is to fly down the nearest black hole.

Universa has is a really place. Everything costs too much there. There are great ships to be salvaged and control of the programs don't work because the hyperdrive program. Last but not least even though the name of the cargo items don't change you'll have to find new markets for them except the future. The name is supposed to change but another bug in the program prevents it.

Finally if you get stuck and need constant help I can supply a complete version of my other program that is in an ALL Dragons for \$1 plus \$10 for postage and packing. Just send your request to: Julian Brown, 2 Lancelot Gardens, Belmont's Lane, Pinner, Middlesex HA5 2PP. Don't forget to include your own address and don't forget the money or you may not receive anything.



Table one

PLANET	COORDINATES	PLANET	COORDINATES
ALABON	1 3 8	DEE LAG	1 5 3
DEE LAG	2 4 8	DEE LAG	3 6 3
DEE LAG	3 6 3	DEE LAG	3 6 3
DEE LAG	4 1 3	DEE LAG	4 1 3
DEE LAG	4 1 3	DEE LAG	4 1 3
DEE LAG	5 5 3	DEE LAG	5 5 3
DEE LAG	6 2 8	DEE LAG	6 2 8
DEE LAG	6 2 8	DEE LAG	6 2 8
DEE LAG	7 4 3	DEE LAG	7 4 3
DEE LAG	8 3 3	DEE LAG	8 3 3
DEE LAG	8 3 3	DEE LAG	8 3 3
DEE LAG	10 5 8	DEE LAG	10 5 8

This format for the co ordinates is easy to use. Add the above to your list of planets but some are cheaper than others. (Check at the most expensive planet and is best avoided at all times).

The recommended trade route is bet.ween Dees (7 1) and Dees (8 2 8). Buy at Dees 7 and sell at Dees 8 but don't buy anything for the return journey.

Technicalities

These planets that have landing taxes are best avoided unless you know what you are doing. If you do visit them make sure it is a brief visit.

At the end of each combat you automatically collect cargo left by the planets. This cargo is always added on to the rest of the cargo. (Check at the most expensive planet and is best avoided at all times).

hold as more than the maximum listed above you will receive none.

For example if you had one hold with a single unit of food you would collect 1 unit of food. But if you had instead 5 units of food you would collect 7 units of food.

If it best to take the results as that you receive 5 units of food which is the maximum sale is about.

For example if you have 1 hold (only 1 unit of cargo, if you have two holds carry 10 or 8 units of cargo with three holds carry 10, 10 or 10 units of cargo).

Don't forget always pay target taxes and cost of transport.

Upgrades

If you take my advice and start trading bet.ween Dees and Dees then a upgrade will be mostly available to you. Don't be tempted to buy unless for your trip on to Dees as you have enough money and it is a waste of money to spend it on a trip on to Dees.

Always expand your cargo hold first.

READPC

Martin Vermeer devised a program to read PC discs on a Dragon

A program to read DragonDOS disks (on a PC has been available for some time) has been available for some time now. One of my friends who owns both a Dragon and PC is very happy with it. It is well made and easy to use. Personally however I have been much more interested in software to do the reverse: transfer PC software to Dragon. Peace and G to run on my little Dragon.

The problem

More than a year ago I was faced with a professional need to get a number of large files from a PC diskette into my Dragon. This solution I chose: had to purchase the PC-READ software from G.P. Johnson — an American professional OS-9 programmer — which is made for the Color Computer and also runs on the Commodore made Series 80000. The latter machine is the one used by a friend of mine — he built it himself from the circuit boards — and asked for it to transfer my data to Color Computer OS-9 format diskettes, which the Dragon can read.

A little complicated, though I suppose there must be many Dragonists who would like to use some of the supposedly advanced PC software on their home machines or who use a PC at work and have made programs or text files for which they would like to use at home also. There might be even frustrated PC users frustrated by the cost of upgrading to the Dragon's superior operating system, but held back by the difficulty of transferring their materials. Anyway I have spent over one year in the following programs: allow for the easy and quick transfer of even large Asci files — text, software source codes, whatever — from MS-DOS diskettes to either DragonDOS or OS-9.

Using READPC

Accompanying this text is a Dragon Basic listing of a program which will read an MS-DOS directory, present you with a directory and transfer the file chosen by you by number to a cassette tape as a Dragon Basic Ascii file. This unconventional solution was chosen (1) to allow single-drive owners to use it and (2) not to price any limit on transferable file size.

LOAD the program and RUN a real test for MS-DOS directory appears on the screen. Choose the diskette to be read by number and press ENTER. Make sure the tape transfer is connected and ready and an empty cassette lined up and ready to record and both Play and Record buttons down. Naturally with large files the transfer may take some time, so be patient.

If more the directory is larger than the screen, you can scroll by pressing the shifted AF key. You can repeat the directory list by just pressing ENTER, or by specifying file number 0. A limitation of this program is that it only reads files in the MS-DOS sub directory.

Be careful if you are transferring profiles in a non-English European language: the extra characters which occur in Spanish, German and Scandinavian which are created by MS-DOS in a way which violates the Asci standard. Where Asci has three characters in the same places as the English US-Asci, read has recognized the correct and the two IBM has been limited including 8-bit code instead. All 8-bit codes are replaced by READPC with question marks. Some lines and others characters that I believe are a cassette PC system does not recognize. In case you want those transferred — important in for example C source code — you should either replace them on your PC or be prepared to correct them afterwards on your Dragon.

The above program puts your file to cassette in Asci file which can be read by word processors like Rowriter. Alternatively, a third program can address the file as a data file by using the well known LANC INPUT &-1 statement, which reads each line of text from cassette return (cassette tape return) from the file into single text string.

If your text happens to be a Microsoft Basic program, you can try to load it straight away into memory and edit it by the Dragon's own line editor. It is likely however that it needs some cleaning up before this works.

Getting to OS-9

To transfer the file to tape I use a DOS 9 requires additional software written to transfer Asci tape files using the OS-9. Note the building block approach: the OS-9 philosophy is "add-on". What I did was simply to use the OS-9 device driver for the Dragon's cassette recorder. I treat the device as a sequential character file, which is only capable of input. With the driver given a descriptor, a little table of values defining the settings of the peripheral device. I obtained both by decompiling and by simply copying the ADAM serial port driver and its I/O descriptor.

Perhaps these programs could be streamlined a little more, but they have been tested and work as they are. In order to perform essential file source codes, and then transfer to your word processor, just press your cassette BOOT OS-9 always before every transfer and test the

modules GABS, CR, and COPY or LIST. To get your file to the screen, you would write:

DOS 9; or (ENTER)

but presumably you are more interested in the transfer: this works with COPY as follows:

DOS 9; or (ENTER)

Cleaning up

When listing the file received you will generally notice that it contains several carriage returns (Ascii 13) also line feeds (Ascii 10). This is typical for MS-DOS Asci files, but the Dragon wants only carriage returns. A second problem is that the cassette I/O system has generated a spurious carriage return in the file.

Both problems are corrected by the following little program: I wish it written in Basic, but I wrote it in PASCAL and used it together with RUN, as follows:

DOS 9; or (Ascii 13) (Ascii 10) (ENTER)

which will produce a new file without proper amount of carriage returns. At the end of the file there will still be some junk, however, but that is easily edited out. READPC does not check for the precise file length: use MS-DOS file.

Nonstandard formats

I have succeeded in reading at least the 200K 5.25" MS-DOS diskette, read in many portable machines by the following modifications: (1) change the parameter DSTART (lines 68 to 70) change line 100 to:

100 FOR LSN = FS TO FS + 1

For other formats other parameters should be changed: number of sides, number of sectors per track, but I have to experience with this. There are plenty of good books on MS-DOS disk structure for public libraries (for example) to help you as well as the excellent (and extremely interesting) Martin's Utilities.

You could also create a general-purpose file transfer utility from the READPC code, modifying: Where line 50, for example, that this routine is usually general-purpose and not limited to sectors of 256 bytes, but needs any sector size. At the moment the program is for 5.25" disk density only, but even this limitation can be removed: the Dragon hardware supports single density 5.25" and only waits for the programmer to use it.

Listing 1

```

LISTING 1: "BASIC" in ROMMON...

10 PRINT "BASIC"
20 FOR I=0 TO 255:PRINT I:NEXT I
30 END
40 END
50 END
60 END
70 END
80 END
90 END
100 END
110 END
120 END
130 END
140 END
150 END
160 END
170 END
180 END
190 END
200 END
210 END
220 END
230 END
240 END
250 END
260 END
270 END
280 END
290 END
300 END
310 END
320 END
330 END
340 END
350 END
360 END
370 END
380 END
390 END
400 END
410 END
420 END
430 END
440 END
450 END
460 END
470 END
480 END
490 END
500 END
510 END
520 END
530 END
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690 END
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710 END
720 END
730 END
740 END
750 END
760 END
770 END
780 END
790 END
800 END
810 END
820 END
830 END
840 END
850 END
860 END
870 END
880 END
890 END
900 END
910 END
920 END
930 END
940 END
950 END
960 END
970 END
980 END
990 END
1000 END

```

```

1000 END
1010 END
1020 END
1030 END
1040 END
1050 END
1060 END
1070 END
1080 END
1090 END
1100 END
1110 END
1120 END
1130 END
1140 END
1150 END
1160 END
1170 END
1180 END
1190 END
1200 END
1210 END
1220 END
1230 END
1240 END
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1770 END
1780 END
1790 END
1800 END
1810 END
1820 END
1830 END
1840 END
1850 END
1860 END
1870 END
1880 END
1890 END
1900 END
1910 END
1920 END
1930 END
1940 END
1950 END
1960 END
1970 END
1980 END
1990 END
2000 END

```

Listing 2

```

LISTING 2: "BASIC" in ROMMON...

10 PRINT "BASIC"
20 FOR I=0 TO 255:PRINT I:NEXT I
30 END
40 END
50 END
60 END
70 END
80 END
90 END
100 END
110 END
120 END
130 END
140 END
150 END
160 END
170 END
180 END
190 END
200 END
210 END
220 END
230 END
240 END
250 END
260 END
270 END
280 END
290 END
300 END
310 END
320 END
330 END
340 END
350 END
360 END
370 END
380 END
390 END
400 END
410 END
420 END
430 END
440 END
450 END
460 END
470 END
480 END
490 END
500 END
510 END
520 END
530 END
540 END
550 END
560 END
570 END
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790 END
800 END
810 END
820 END
830 END
840 END
850 END
860 END
870 END
880 END
890 END
900 END
910 END
920 END
930 END
940 END
950 END
960 END
970 END
980 END
990 END
1000 END

```


How green is my black

Paul Reid gets bored with black on green, and invents an inversion.

THE video display generator (vdg) chip in the Dragon, the one that decides that we are black with a really rather bland black, as green text display and black screen border is the Motorola MC68447 located on the main board next to the Dragon's cassette and joystick sockets.

Consulting the specification sheet for this particular chip I discovered that pin 32 can be used to select the screen colours in Alpha (text) mode. This is done by providing either a high or a low voltage to pin 32. High at +5 volts. At with most mode however there is a trade off. The normal mode video generators, the lower case set, are not generated in binary and are unswitched by the mod. This has both advantages and disadvantages. On the plus side a basic program listing on the screen, which includes lower case text intended for output to a printer will appear as normal text but inverted along with everything else, neither the block of inverted characters which I say form upper case characters listed in both them makes the whole thing very difficult to read. On the minus side, it is difficult at times when updating lower case text in the inverted state to know whether you are in upper or lower case mode.

the switch and the switch itself a single pole double throw (spdt) type wiring with three lengths of insulated wire each about 40cm long. Switch off and disconnect the power supply.

*I discovered
that pin 32
can be used to
invert the
screen colors
in Alpha
(text) mode*

(see figure 5). On some boards the vdg chip is in a socket. If this is so with yours remove the chip taking care to bend the legs. An IC-18 Engineering tool should be

After separating the two halves of the Dragon case by removing the four screws located one in each corner of the base (with 1 screw may be some Dragon owners who haven't been asked to bend yet) drill a suitable quantity of the most convenient accessible place for the switch. Remember that you will want to be able to operate it while using the computer. Identify pin number 32 of the vdg chip and also pin 20 (used if possible). Bend pin 32 downwards so that it is at 90 degrees to the other pins and solder one end of the first length of wire onto it. The other end of the wire should be soldered to the centre common pin of the switch. Next solder one end of the second piece of wire to the upper wide part of pin 20. Solder the other end of the pin or longer wire to the other lower pin. The other end of the wire should be soldered to either of the two remaining pins of the switch. The third length of wire must be soldered between the remaining pins on the switch and the point which pin 32 normally fits into. If on your Dragon the wire the vdg chip soldered directly to the board, pin 32 should either be soldered (using liquid or a vacuum former underneath of the board) and carefully pulled back through the board or cut with a pair of side cutters as close to the board as possible.

If it was removed, the vdg chip can now be refitted taking care that pin 32 does not make contact with the wire now soldered to its place. Fit the switch to the case in the drilled hole and reassemble the case. Do connect the power supply normally and switch on. Don't worry if the display is normal, operate the new switch and see what happens!

Ten minutes

The next modification will not only affect the computer's operation, or inaccurate any program changes, but it like me you are tired of that black on green display, it makes a refreshing change! Even if you are not a wizard with the soldering iron, provided you are careful not to use too much solder you should have no problems and the results are well worth the 10 minutes or so to do the modification and the cost which is only a few pence.

Although this mod has been tried and tested so that the author and Dragon user can accept no responsibility for any problems arising from the modification, we also suggest that you don't attempt a modification even if simple one, unless your computer unless you are experienced at construction.

Hot Asail

A second trade-off is that because the cursor is not an Alpha text character it does not invert. Instead it becomes a flash red block graphic, a block on a black background, somewhat difficult to read.

Nonetheless, these apparent problems can be overcome. The essence of this modification is that it is switchable - even during the running of a program. So if of confusion arises simply by switching back to normal video the display instantly returns to the original format. Moreover the problem of the missing cursor can be overcome by replacing the graphic block with a replace or other Alpha character using the routine published in DU a while ago (35). Now about repeating the seen inverted text (as the one of using a set seven 2 minutes to activity 2-10).

The advantages of using this method to achieve inverted display are obvious when it is considered how much basic programming is required to achieve inverted spaces and punctuation marks in print statements!

Here then are the instructions for carrying out the mod which requires only the (potential) use of a soldering iron, preferably low wattage, with a minimum tip, a drill for making the hole in the case in which to fit



Down in the dumps

Dragon User presents another screen dump

Seikosha GP100A

This basic program can dump the contents of the Dragon's hi-res screen (0,0 and 4,4) directly to the Seikosha GP100A printer in one of two sizes: small (about 4in by 6in) and large (just under A4 size).

After the program has been typed in correctly and run, it is simple to use. Full instructions are in the program. You simply enter the PMODE which the screen in question was saved in, the page of the

dump, and various other details, and the screen file, saved in the normal way (created by a test program or from a game screen, etc.), is then loaded and dumped. It is worth pointing out that some utilities save and display different methods. By one method, once a screen has been loaded it traces any program's memory. The program allows for this, simply load in your memory using LOADM (below) and, for the dump program, add the choice option 2 from the menu.

This program is also available on tape from myself, priced £3.00 (UK). Cheques/POs payable to Andrew Hill, 12 Fairy Jones Close, Epsom, Surrey, NPO 9 9BH.

Note: the Seikosha GP100A uses an unusual method of graphics printing. It needs 7 bits at a time instead of the more usual 8.

PMODE 1 and 3 allow screens to be only 64printed if you change the PMODE to 2 or 4 so that they are monochrome.

Andrew Hill

Dump C

```
10 REM *****
20 REM * - SCREEN DUMPER - *
30 REM *****
40 REM * (C) COPYRIGHT 80 *
50 REM *****
60 REM * WRITTEN BY A.HILL *
70 REM *****
80 CLEAR 500
90 GOSUB 100
100 PRINT "*****"
110 PRINT "*****"
120 PRINT/PRINT "*****"
130 PRINT "*****"
140 PRINT "WELCOME TO Seikosha screen Dumper". A PROGRAM WHICH ALLOWS YOU T
O VIEW THE CONTENTS OF YOUR HI-RES SCREEN (0,0,4,4) TO THE PRINTER.
150 PRINT/PRINT "*****"
160 PRINT " - PRESS THE SPACEBAR NOW - "
170 IN=INKEY$
180 IF IN=CHR$(32) THEN GOTO 170 ELSE PLAY FOR
190 FOR HOLD=0 TO 5000:NEXT HOLD
200 GOSUB 210
210 PRINT/PRINT "00 = YOU INCLUDE INSTRUCTIONS."
220 PRINT/PRINT "01 = YOUR HI-RES SCREEN HAS ALREADY BEEN LOADED (AL
230 PRINT/PRINT "02 = YOU DO NOT INCLUDE THE INSTRUCTIONS)
240 PRINT
250 INPUT "WHICH INSTRU - ";I
260 IF IN=CHR$(0) AND IN=CHR$(1) AND IN=CHR$(2) THEN GOTO 280
270 IF IN=CHR$(3) THEN FOR HOLD=0 TO 5000:NEXT HOLD
280 IF IN=CHR$(0) OR IN=CHR$(1) THEN FOR HOLD=0 TO 5000:NEXT HOLD
290 REM INSTRUCTIONS FOR
300 REM SCREEN DUMP
310 GOSUB 320
320 PRINT/PRINT "*****"
330 PRINT/PRINT "*****"
340 PRINT/PRINT "*****"
350 PRINT/PRINT "*****"
360 PRINT/PRINT "*****"
370 PRINT "00 = YOU INCLUDE ALL YOU HAVE TO DO IS TO LOAD IN YOUR HI-RES
SCREEN FROM TAP WITH ASCII. "
380 PRINT "01 = WITH COPYR READY AND SWITCH ON YOUR PRINTER AND HAS LET T
HIS PROGRAM DO THE REST."
390 PRINT/PRINT "*****"
400 IN=INKEY$
410 IF IN=CHR$(32) THEN GOTO 390
420 PLAY FOR
430 FOR HOLD=0 TO 5000:NEXT HOLD
440 PRINT "*****"
450 PRINT "*****"
460 PRINT "*****"
470 PRINT "*****"
480 PRINT/PRINT "IF THIS PROGRAM IS BEING RUN THE HI-RES SCREEN HAS LOADED.
FOLLOW THE INSTRUCTIONS (also IN THE INSTRUCTIONS."
490 PRINT/PRINT "*****"
500 IN=INKEY$
510 IF IN=CHR$(32) THEN GOTO 500
520 PLAY FOR FOR HOLD=0 TO 5000:NEXT HOLD
530 REM MAIN PROGRAM **
```


Dragon Comms

Martyn Armitage introduces communication for the Dragon

SO, you've got a Dragon 64 and the only socket that you've probably never used is the one marked *quadrant 10* (the RS232C socket) to give it its full title. There are two main ways for the interface: 1) for connecting a set of printers; and 2) for connecting a modem. Most of what is said in this article will be regarding the use of the port as a communications interface, along with a modem, but most of what is written will also hold true for the communications port. To start off with I shall attempt to put into layman's English some of the most commonly used jargon that is associated with the RS232C interface, such as parity, baud, etc. First we'll start off with protocol, which itself can, and will, be split into sections.

Setting standards

Protocol can be briefly described as some established or 'agreed-upon' and simply a set of standards that one should adhere to if you wish to get anything other than garbled characters across (except if you're using a printer). As I have already said I'm going to be at this for a long time and the various parts that I consist of:

PARITY is a very simple method of error detection on received data. When in the communications world you will hear the phrases odd parity, and even more parity, quite regularly, and just on off you will hear it again? Just remember this: one and one don't equal 2. As you will know, a byte is made up of eight bits, each bit being either *on* (1) or *off* (0). Parity works by counting the number of set bits (1s) in a byte (data, and either setting or clearing the parity bit, in the transmitted data. Odd parity, as the name implies, means the number of set bits odd. For example, if we wish to transmit the character 'A', it is bit pattern as 01000011, and as you can see that there are seven number 1s in set bits (2s), so with odd parity the parity bit would be set (1) making the number 3s, if it were already an odd number of set bits then the parity bit would clear.

The same thing still happens under even parity, except that the parity bit is used to make an even number of set bits. The error detection works in this way: when data is received the set bits are counted, this is found that there is an even number of set bits and odd parity is in use, then obviously there is an error somewhere in the byte. There is no indication as to which bits the error has occurred, only that the value at bit 10 can be used from then that parity checking used in its own right of very little use, until the data is so parity, where no parity checking is done, regularly, every word.

Mark/space

MARK and **SPACE** when we talk of bits, within a byte we usually say that they are either set or clear. When talking in terms of communications a set bit is termed a *mark*, and a clear bit is given an *space* space.

START/STOP BITS there are two types of transmission of data: synchronous and asynchronous. As the interface for the Dragon 64 is the RS232C Asynchronous Communications Interface Adapter (ACIA), for short, and is not capable of this synchronous transmission it will simply say that with asynchronous methods, the last communicating computer, in this case, the Dragon, will send each other and so on, and so on, synchronised with each other, there is no need to indicate where each byte of data starts or stops. A series of synchronisation bytes being transmitted at intervals, very much similar to the methods used for saving program info on tape. The RS232C being asynchronous has to use other methods of determining the start and end of a data byte. This is done by the use of start and stop bits. A start is simply a bit that it enables the start of data. The start bit is transmitted as a zero, then come the data bytes, which are always mark or space depending on the bit being transmitted. They are then followed by the stop bit(s), which tells the start bit is terminated by the mark. As you can see an eight bit byte when transmitted by the RS232C says choose the interface adapter is at least two bits long. Depending upon the protocol being used, either one or two stop bits are used.

BAUD RATE the baud rate is a measure of speed of transmission and can be translated into per second. For example, 300 baud can be regarded as 300 bits per second, or 300 bytes per second (30000 = 300). The figure of 300 bytes is of course assuming the transmission of 1 bit per byte, but as I have said above we are transmitting at the least 10 bits per byte, and so 300 baud becomes 3000 characters per second (30000 = 300).

SPLIT BAUD RATE a split baud rate is a way of saying transmitting and receiving data at different speeds. The standard split baud rates are 19200 and 9600. The first number is the speed that the receiver is set to receive the data, and the second is the speed that the transmitter is working at. In the first case the data is received at 19200 baud and transmitted at 9600, the second case is the opposite: receive at 9600 and transmit at 19200 baud.

FULL/HALF DUPLEX full duplex describes the ability of the ACIA to communicate in both directions at the same time, whereas half duplex describes the ability to transmit and receive, but at the same time. When using the half duplex method it is necessary for each machine to be in either mode when it is transmitting and is ready to receive. This is very much like two people communicating over a two-way radio, and having to say 'over' when it's time to take a telephone conversation, each can talk at the same time.

Internal checks

That will about covers most of the most commonly used phrases and terms. The user of the RS232C should realise that all the parity checking, addition and subtraction of the start/stop bits, a character usually by the chip and any errors are automatically the flag of the status register of the chip. This data is presented to the user in the data condition codes register. Unless of course an error has occurred, in which case the data could be just about anything.

The RS232C interface does not operate on TTL levels (0V to 5V) for signalling but instead uses voltage levels between -25 volt and +25 volt. The Dragon interface adapter connects to the main board, namely 12V to 12V. One other thing with the RS232C interface is that on the data lines a voltage level of between +3V and +25V represents a 1, 0, and 0V to 25V represents a 1, 0, and 0V, with the opposite being true for the control lines.

The computer is given the term Data Terminal Equipment (DTE) and the modem is given the name Data Communication Equipment or DCE for short.

Now onto the Dragon's RS232C port. You probably won't be surprised when I say this but the Dragon's serial port looks as though it was designed into the machine, the user being provided with two of the most possible control lines available, however the control lines provided do allow the interface between a terminal unit when there are seven connections available: they are: 1) TX, 2) GND, 3) DSR, 4) RX, 5) CTS, 6) 12V, 7) 0V. Let's go through bit by bit at once.

TX is the abbreviation for transmit, with data being sent by the Dragon leaves on this pin.

GND is the ground pin, and is used as a return for all of the signal wires. **RX** is the receive signal, here it is the data coming in to the Dragon. **CTS** which is short for Data Terminal Ready is the line used by the computer (DTE) to indicate to the modem

Winners and Losers

Every month,
Garden of Eatin' will
host a new and fun program!

On January 3, Dragon wrote: "I gave my solution to the October competition problem. This was to find primes in ranges which belong to more than one class of the figurate numbers. To keep the solution as simple as possible, the listing that was given contained just the list of the figurates of order 10, because given the comparison was between the square and triangular numbers. Whereas the program now, each matching value is printed in white and the program can be stopped at once after the required number of values has been found. The formulae used in lines 80 and 30 of last month's program are those which express the rule in Dragon's words. By inserting one or both of these formulae between each row, the total required primes can be computed. The actual method that the program uses, which is described in 'happily' last month, to generate a temporary population of mutated one, two, three, and four, speeds up the execution time of the program."

Listing 2

These findings suggest that the integrity of brain of the animals recovered — spent in moderate leisure is likely still

was a rushed program was — too long to be reproduced now. In considering some of the shorter listings, I was surprised to find that some, when asked to produce the solutions submitted with them.

Environmental

However one which did come up with the right answer is given here. It was from E. A. Kamenova of Addis Ababa, E. A. S. and is interesting in that it makes use of the function $\Gamma(x)$ of the government of the United Kingdom. This formula which produces the triangular square cube, triangular and pyramidal numbers are in fully decimal lines 60 and 69. To perform any of these calculations subsequently in the program it is simply necessary to use a π as such as 3.1415926535 which if it is not in memory, say it will compute π as, to — the fifth triangular number. The value's type of using the π in computing is useful can be used repeated in different parts of the program without the need to type in the generating formulae more than once. In the case of particularly complex formulae this can prove quite an advantage and will also help to encourage interest in E. A. Kamenova in using the parts of the program instead of the



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stages of the computation are performed using the FM command in the subroutines `fm12` to `fm32` in lines 98 and 100. The model selection of `fm32` (TH13) is arbitrary. Potentially it could accommodate the use of more than one set of these commands in a single program line unless you fully understand the logic which the compiler uses in interpreting these lines (in the same way that a too liberal use of `AND` and `OR`s can also produce undesirable results).

A number of other readers also included a praise routine in their programs to reproduce the paid arrangement for the essays. Thanks to Ann Laidgens of Washoe Sentinel and Randy Longmire of Clark County USA, who were among the winners who presented these solutions graphically. Special thanks must also be made of Susan Henderson of Bromsgrove for a very neat piece of graphics produced using an inexpensive Tandy CO-2160 series.

```

20 FLSB D1M R45, D15 DEF PNTX(1)=1+(X+1)/21 DEF PNTY(1)=2+1111111 FND D1X)=
X+1111111 FL=1
20 DEF PNTX(1)=X+1(1)=1+(X+1)/21 DEF PNTY(1)=2+1111111 FND D1X)=
30 X=PNTX(1):Y=PNTY(1):RETURN
40 X=PNTX(1):Y=PNTX(1):RETURN
50 X=PNTX(1):Y=PNTY(1):RETURN
60 X=PNTX(1):Y=PNTX(1):RETURN
70 X=PNTX(1):Y=PNTX(1):RETURN
80 X=PNTX(1):Y=PNTY(1):RETURN
90 T=21+1111111:FL=1+1111 FL= FLN GOTO 100 ELSE IF T=0 THEN T=1 FL
100 IF FL=0 THEN T=2 ELSE T=0
110 ON FL+1 GOSUB 30,40,50,60,70,80
120 IF X=Y THEN R(FL,T)=1:GOTO 140
130 IF X=Y THEN N=N+1 ELSE N=N+1
140 GOTO 100
150 IF T=1 THEN GOTO 90 ELSE T=T+N+1:GOTO 100
160 FOR I=0 TO 3:IF I=1 THEN K=0:J=1 ELSE IF I=2 THEN K=0:J=1+1 ELSE
K=0:J=1+1
170 FOR J=0 TO 2:J=J+1:K=K+1:IF K=0 THEN PNTX(1)=J+1:PNTY(1)=
170 NEXT J:J=0:J=1:GOTO 100

```

Fig. 1. *Phragmites australis* in the Sacramento-San Joaquin River Delta. (a) *Phragmites australis* in the Sacramento-San Joaquin River Delta. (b) *Phragmites australis* in the Sacramento-San Joaquin River Delta.



SLIGHT panic that Gerrard as he begins his trail for his complete with numerous Oregon adventure telephones but panic over as it is referred from beneath two copies of Dragon User has programming advice with message the rest of telephones everywhere. Know Gerrard's additional one of my brother. I must not out the thing system at this some day.

A belated thank you to the people who sent me Christmas cards via Dragon User — oh I didn't know you could! A special thank you to Joe Brinkley, our noted sex respondent from Maine, who sent me a not only a Christmas card but a postal order for one pound too I should say myself I think. What a star! I must point out, by the way that when I gave Joe's address last time I got things slightly wrong. The full address is 79 Annapolis Street, Haverhill, Mass. What I printed as the post code last time was in fact the area's Post Office telephone I apparently got the people who write to Joe I pass on his thanks) indicated that as the post code much as the unexplained of Joe and his position.

It seems that many of you wrote to him exchanging addresses and giving details of many games and utilities. Some of yours read well over 200 lines on after. Well some catch and snippets keep up the good work.

Returning briefly on the foreign side of things. Ole Elvige (who can be found at address M 6416) Bayview, Norway — just started being contacted with date this time) wrote me to tell you that he said a Norwegian Dragon magazine and that he can get help for the following adventures: Black Sanctum, Castle Guard, Castle of Doom, Dragonland, Dragon, Castle Adventure, Dark Place, Dragon Mountain, Fantastic, Zomb, Golden Master (very recently solved myself in one afternoon), Avalonquest, Mountain Adventure, Mission of Doom (bond of Doom, these adventure writers), Hattiger's Dark World Adventure, Return of the King, Ring of Darkness (and magazine Quest, Sherrynway, The Old Viking Fire Machine, Inlander and finally the whole Reader. If you fancy a few exotic stamps drop him a line.

Plus letter from gile finds out that it is from Glen Ferrie in Blackfield, who says that I wrote a superb column. Who is this

man, gets a copy answered definitely. It is an old friend, is Zyggie and I've got yet another letter from him on a Steve Wood in Essex — we shall be returning to this club later about the state problem in the same game. It is all to do with entering those co-ordinates to which you about all over the place, since you've got to the transporter itself you've all should know by now the co-ordinates for the various places that you want to get to are

Planet 5-4 1 5
Emerald 5-7 3-5
Vader 1-8 5-5

Read the carefully Sam and Server, for each place, enter each number by pressing that number and at the end of the row (after the fourth number has been entered in other words) you must PULL LEVER. And every you go I thought nobody would ever have problems with Zyggie ever again, but I just guess to prove that this extremely popular adventure for the Dragon still manages to confuse people. The sign of a good game, I suppose.

Problems with Ringwood for Andrew Lamb in Hazel Grove, Shropshire. An address that should be familiar to a few of you. But I shall say no more, the who must be played would probably turn into column if I mentioned another publishing company. Any need so, as they say, he's having problem in getting the changes, sample (and quotes) many many hours of typing. Well, section 5 of the magazine at about the part that deals with the collecting of the exchange) reads as follows:

Send Bruce into Dwarf Dive and press the button to reset the lift. Bring him out via the northern entrance. Send Pogrom in through the southern entrance and down on the lift to get the services. Drop him out via either the northern or southern exit and transfer the services to Goleth. Get Goleth to reset the entrance. To complete Dwarf Dive, send Goleth in down on the lift and take it and give him a change from the lowest mushroom and give the unchanged to Bessing. This is to do to complete without getting caught to use the HOLD and QUIT command.

There, let's hope that's sorted that

whole problem. A little off further on in the game Andrew tells us that he can't bypass the walled garden. I shall quote step number 11 in the solution.

Send Goleth into the walled garden carrying the wand and Cast Spell then get the rod. He returns from the rain into the wand is complete. Use the wand to enter the apex and give them is High to bear.

That's all we need to know about Ringwood I think, so back to Stephen Wood and his many problems. All of them I had in mind, are connected with a quantum games. Wouldn't want anyone to get the wrong idea.

Where should we start Stephen? How and things don't get going in the late and the last to be the Wood? And for proving that I was the last. Anyway, let's take a look at Ringwood Again. Where after the first time, he wants to enter. On the garden panel, basically with a column will tell you. Where is the end? North from the sign on 5380. Where is the (that) that thing to help you breathe on planet? So technical, a bit is the object is question I believe. Have we unlocked the column? Have we opened the manual? Have we pressed the red button in the secret room? Are we in fact, wasting our time at trying to play adventure and should we do something marginally more useful like unfolding paper clips or sharpening pencils? How then, says Stephen, couldn't I reset a see dig at someone. Where are our usual objects, he would like to be in forced. Well, I can't tell you everything now can I? Read last month's column in mind's detail, it's all in there somewhere.

And one Judge, please, when the question is still in something out of The Restaurant at the End of the Universe where a the speed with which to dig in the bottom right past the door past the right side so as to get the Red Cortex Gun? You however is full of wits and all that. Any led what he must do at to find the whys the good with your camera and take the photo from him. Where is the camera? In the photo gallery. Where is the photo gallery? Go to the museum gallery (don't enter unless you really want to for the car and board it when the door opens. And if you can't find the museum gallery then

From Gray to black and white

Gordon Lee and Graham Barber try to harness Gwynn's power

A bonus for compiling the compendium takes the form of letters (mostly complimentary) which readers include with their entries. One such comes from Graham Barber of Sultan College, who writes:

—Invited is where for the Competition Page. During the past 28 months or so I've had so much pleasure and interest from CG (especially the competition) that I thought it time to put something back, and then being asked to "submit" is the just thing. Submitting an entry to you could be like a "Submit a review".

that only one digit differs at each step. Because addition is necessary to introduce certain additional rules, it is logical to assume that an addition can be formed

But what is the point of all this? Consider the practical application of reading a tape recorder. With a conventional mechanical readout device there is no real problem when the reading changes from 10000 to 10001 even though three of the wheels change simultaneously. But consider the situation with high speed machinery where rapid sampling needs accurate half second monitoring. The

the square, the descriptive content of bits per line is equivalent to using the corners of a square (here the vertices of possible paths) to measure, and at each corner, the choice of two possible next steps. The only requirement is that the route chosen should take us to every corner only once. Starting at corner 0000, it is quite easy to find a number of possible routes, all different from each other, but eventually all producing a set of codes which obey the basic numeric rules. Some of the routes are cyclic, so ending on an adjacent corner to 0000; others are not. For most applications, a cyclic route is preferable. For each additional digit used in a sequence, the number of possible paths to measure is an increasing size. Using just four digits, there are 2520 different pairs of codes, or what 2688 are cyclic. However, many long-term, but not short-term, codes

To be of practical use it is therefore necessary to formulate some additional rules whereby each binary/Gray code will bear a 1:1 relationship with a conventional binary number in that any conversion from one code to the other is unambiguous.

Crabtree's computer problem is to devise a program that will convert an input Gray code into its binary equivalent. But, I hear you ask, what is a Gray code? (You can hear me in French, can't you?) — Ed S.

That is, to input elementary and a system of counting in the first concentrated numbers are obtained by changing new sign and original original meaning, the difference is that deal being 7. This was first developed by Peter Hiley, an American research physicist, and the codes now later to be used. Only codes can be for revealed for number systems in any base — for example, in the familiar decimal system an adequate set of codes might be 47, 48, 49, 50, 51, 52, etc. Note that these are known to us at this stage, even

three lights shining forward. A sensitive counter will reduce the possibility of error. A typical link between a machine component and an electronic counter by means of an optical disc using optical switching and hence a binary system, so we can confine our attention to the binary Gray code. This was first developed by Frank Gray in the 1940s to reduce a common (but) misnomer of errors by pulse code modulators.

At first sight it might appear difficult to maintain a logical order for listing the nodes. If we first try to construct the full Ford tree we get the display with 00 01 11 and 10. This can be represented diagrammatically by placing these four nodes at the corners of a square (Figure 1). In this case doubling steps in the sequence correspond to predicting a single path for the maximal cost amount.



Figure 1 shows a sample of the 100-item test. The test is a 100-item multiple-choice test. The test is a 100-item multiple-choice test.

Figure 1

[illegible]

Results

When the wheel comes down and your good comes to what you may discover that your Dragon has produced an answer. Find it out quickly, before you

MUCH COOPERATION at the small and dense, not thick, wood stand.

Oh yes, and don't forget the takeaways! We want to know why you think that you deserve to be sent to a psychiatric ward like I'm trying the lines out on the boat, which is not a bit as much as good!

Discussion and conclusions

IT services in a technology-driven, fast-paced environment like the Internet industry are fast changing and growing. There are many opportunities offered at SBA Software as a company would have 1000 jobs. Please Contact Software and for Huggins at Campbell, Olive Spill at Campbell, H. W. Wilson at Cambridge, Dave Landers at Cambridge, D. H. Gordon at Cambridge.

Dr. Campbell is a highly active full-time Christian leader. John Bishop of All Systems, Paul Provencal of Landmark, James Bonfield of Sandy, J. Smallwood of Phoenix, Hal Pate Nelson of Darius, David G. Mulvey of Cambridge, M. Sullivan of Luncrans, Neil Davidson of Albany, Christopher James of Tulsa, Gene Pappas of Epworth, E. J. Henner of Abilene, J. Smith of Tayford and S. R. Green of Jacksonville.

...Forsythe discovered that Paul Young
knew him from a previous interview.
I asked him if Oregon had had any
by a friend. This is an area of investigation
has an

2000

*T. H. Morgan, *Genetics*, 1913, 1931, 1934, 1936, 1938, 1941, 1943, 1945, 1947, 1950, 1952, 1954, 1956, 1958, 1960, 1962, 1964, 1966, 1968, 1970, 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022, 2024, 2026, 2028, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048, 2050, 2052, 2054, 2056, 2058, 2060, 2062, 2064, 2066, 2068, 2070, 2072, 2074, 2076, 2078, 2080, 2082, 2084, 2086, 2088, 2090, 2092, 2094, 2096, 2098, 2100, 2102, 2104, 2106, 2108, 2110, 2112, 2114, 2116, 2118, 2120, 2122, 2124, 2126, 2128, 2130, 2132, 2134, 2136, 2138, 2140, 2142, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160, 2162, 2164, 2166, 2168, 2170, 2172, 2174, 2176, 2178, 2180, 2182, 2184, 2186, 2188, 2190, 2192, 2194, 2196, 2198, 2200, 2202, 2204, 2206, 2208, 2210, 2212, 2214, 2216, 2218, 2220, 2222, 2224, 2226, 2228, 2230, 2232, 2234, 2236, 2238, 2240, 2242, 2244, 2246, 2248, 2250, 2252, 2254, 2256, 2258, 2260, 2262, 2264, 2266, 2268, 2270, 2272, 2274, 2276, 2278, 2280, 2282, 2284, 2286, 2288, 2290, 2292, 2294, 2296, 2298, 2300, 2302, 2304, 2306, 2308, 2310, 2312, 2314, 2316, 2318, 2320, 2322, 2324, 2326, 2328, 2330, 2332, 2334, 2336, 2338, 2340, 2342, 2344, 2346, 2348, 2350, 2352, 2354, 2356, 2358, 2360, 2362, 2364, 2366, 2368, 2370, 2372, 2374, 2376, 2378, 2380, 2382, 2384, 2386, 2388, 2390, 2392, 2394, 2396, 2398, 2400, 2402, 2404, 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2420, 2422, 2424, 2426, 2428, 2430, 2432, 2434, 2436, 2438, 2440, 2442, 2444, 2446, 2448, 2450, 2452, 2454, 2456, 2458, 2460, 2462, 2464, 2466, 2468, 2470, 2472, 2474, 2476, 2478, 2480, 2482, 2484, 2486, 2488, 2490, 2492, 2494, 2496, 2498, 2500, 2502, 2504, 2506, 2508, 2510, 2512, 2514, 2516, 2518, 2520, 2522, 2524, 2526, 2528, 2530, 2532, 2534, 2536, 2538, 2540, 2542, 2544, 2546, 2548, 2550, 2552, 2554, 2556, 2558, 2560, 2562, 2564, 2566, 2568, 2570, 2572, 2574, 2576, 2578, 2580, 2582, 2584, 2586, 2588, 2590, 2592, 2594, 2596, 2598, 2600, 2602, 2604, 2606, 2608, 2610, 2612, 2614, 2616, 2618, 2620, 2622, 2624, 2626, 2628, 2630, 2632, 2634, 2636, 2638, 2640, 2642, 2644, 2646, 2648, 2650, 2652, 2654, 2656, 2658, 2660, 2662, 2664, 2666, 2668, 2670, 2672, 2674, 2676, 2678, 2680, 2682, 2684, 2686, 2688, 2690, 2692, 2694, 2696, 2698, 2700, 2702, 2704, 2706, 2708, 2710, 2712, 2714, 2716, 2718, 2720, 2722, 2724, 2726, 2728, 2730, 2732, 2734, 2736, 2738, 2740, 2742, 2744, 2746, 2748, 2750, 2752, 2754, 2756, 2758, 2760, 2762, 2764, 2766, 2768, 2770, 2772, 2774, 2776, 2778, 2780, 2782, 2784, 2786, 2788, 2790, 2792, 2794, 2796, 2798, 2800, 2802, 2804, 2806, 2808, 2810, 2812, 2814, 2816, 2818, 2820, 2822, 2824, 2826, 2828, 2830, 2832, 2834, 2836, 2838, 2840, 2842, 2844, 2846, 2848, 2850, 2852, 2854, 2856, 2858, 2860, 2862, 2864, 2866, 2868, 2870, 2872, 2874, 2876, 2878, 2880, 2882, 2884, 2886, 2888, 2890, 2892, 2894, 2896, 2898, 2900, 2902, 2904, 2906, 2908, 2910, 2912, 2914, 2916, 2918, 2920, 2922, 2924, 2926, 2928, 2930, 2932, 2934, 2936, 2938, 2940, 2942, 2944, 2946, 2948, 2950, 2952, 2954, 2956, 2958, 2960, 2962, 2964, 2966, 2968, 2970, 2972, 2974, 2976, 2978, 2980, 2982, 2984, 2986, 2988, 2990, 2992, 2994, 2996, 2998, 3000, 3002, 3004, 3006, 3008, 3010, 3012, 3014, 3016, 3018, 3020, 3022, 3024, 3026, 3028, 3030, 3032, 3034, 3036, 3038, 3040, 3042, 3044, 3046, 3048, 3050, 3052, 3054, 3056, 3058, 3060, 3062, 3064, 3066, 3068, 3070, 3072, 3074, 3076, 3078, 3080, 3082, 3084, 3086, 3088, 3090, 3092, 3094, 3096, 3098, 3100, 3102, 3104, 3106, 3108, 3110, 3112, 3114, 3116, 3118, 3120, 3122, 3124, 3126, 3128, 3130, 3132, 3134, 3136, 3138, 3140, 3142, 3144, 3146, 3148, 3150, 3152, 3154, 3156, 3158, 3160, 3162, 3164, 3166, 3168, 3170, 3172, 3174, 3176, 3178, 3180, 3182, 3184, 3186, 3188, 3190, 3192, 3194, 3196, 3198, 3200, 3202, 3204, 3206, 3208, 3210, 3212, 3214, 3216, 3218, 3220, 3222, 3224, 3226, 3228, 3230, 3232, 3234, 3236, 3238, 3240, 3242, 3244, 3246, 3248, 3250, 3252, 3254, 3256, 3258, 3260, 3262, 3264, 3266, 3268, 3270, 3272, 3274, 3276, 3278, 3280, 3282, 3284, 3286, 3288, 3290,

